microscope discloses only the fact that the outer part of this organ is very muscular and the inner central area is in all probability a definite mouth opening (Fig. 1, m.). Leading back from this mouth cavity is a narrow rod-like digestive tract (Fig. 1, d.) such as is characteristic of Rhabodocoelida. It extends nearly to the posterior end of the body and shows no signs of lateral branches.

Near the median line of the body and just back of the head-lobe is a well-defined brain (Fig. 1, b.). It is typically two-lobed. Leading out from its anterior and lateral surfaces are numerous clearly visible fibres which are distributed to the body wall of the head region. Besides these general fibers there may also be seen two clumps of nerves which go directly to the anterior tip of the tactile head-lobe. Passing posteriorly from the two brain lobes are the two main nerve trunks (Fig. 1, n.). They are visible for some distance and give off numerous branches toward the periphery. Resting directly above the brain are the eyes (Fig. 1, e.), which appear as two large irregular black pigment spots.

The most visible feature about the worm when it was first found was the large mass of almost black ova (Fig. 1, o.) arranged in two irregularly parallel rows, one on either side of the digestive system and extending over considerably more than the middle half of the body. These ova were of large size, regularly oval, and entirely opaque. They were eighteen in number (nine on a side) when the animal was found, but soon all but one were shed. This one was retained within the body for a considerable length of time.

Other parts of the reproductive system were also visible, namely: (1) an ovary (Fig. 1, ov.) directly in front of the mouth; (2) long branching yolk glands, and (3) testes. The two latter showed but slightly until after the eggs were shed.

The two well-defined flame cells could be recognized in the tail region, one being just back of the hindermost ovum on each side.

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CELLULAR ACTIVITIES CONNECTED WITH SHEDDING OF LEAVES

Lee (Annals of Botany, January, 1911) gives the results of studies upon nearly fifty species of common Dicotyledons in respect

to the cellular changes accompanying and causing the fall of leaves. As has long been known, there are two distinct processes involved: (a) that connected with the *separation* of the leaf from the stem, and (b) that of protecting the exposed surface. In Dicotyledons a *separation-layer* is formed, and the leaf separates from the stem by the disappearance of the middle lamellae of the cells of the separation-layer and the breaking of the seive tubes and vessels of the leaf-trace at that level.

The protective-layer, which is always formed, may be formed either before or after the leaf-fall. This layer is produced in two principal ways: (a) by the deposit of lignin and suberin in the walls of the cells of the leaf-base, either without any special division of the cells, or with only irregular divisions; and (b) by cells produced thru continued division of a regular cambiun, and later becoming ligno-suberized. The author indicates that these microscopic cellular differences have no relation, according to his studies, to the systematic position of the plants.

In the study of the premature fall of leaves, which in some plants followed the sharp cold of the late spring of 1910, the present reviewer found evidence that some plants were thus stimulated into the production of the separation-layer similar to that found in normal defoliation.

THE HERBACEOUS ARRANGEMENT OF ELEMENTS DERIVED FROM THAT OF THE WOODY TYPE

There has long been a general feeling among botanists that the continuous woody ring found in trees and shrubs represents a development from the herbaceous type, in which these bundles of elements are separated by wide spaces of parenchymatous tissue. It has been conceived that the isolated bundles have been fused into a continuous ring by the development of cambium across the broad medullary rays, and that in this way the bast and woody elements have increased at the expense of the rays.

Eames (Ann. Bot., January, 1911,) gives cogent reasons for believing that the ring type is the more primitive of the two arrangements and that the scattered bundles of the herbaceous type are